

EIP Bulletin

TENNESSEE EMERGING INFECTIONS PROGRAM

Tennessee Department of Health Communicable and Environmental Disease Services

August 2003

Emerging Infections in Tennessee

Infectious diseases are a continuing menace to all people, regardless of age, gender, lifestyle, ethnic background, and socioeconomic status. They cause suffering and death and impose an enormous financial burden on society. Although modern advances such as vaccines and antibiotics have conquered some diseases, new ones are constantly emerging or re-emerging.

In 1994, The Centers for Disease Control and Prevention (CDC) developed the Emerging Infections Program to revitalize the nation's capacity to protect the public from infectious disease. This issue of the Emerging Infections Program

(EIP) Bulletin highlights three new infectious diseases that illustrate the value of the EIP: West Nile virus (WNV), severe acute respiratory syndrome (SARS), and monkeypox. In 1999, WNV was unknown on the North American continent. In early 2003 both SARS and monkeypox were unheard of in North America. Only six months later, August 2003, most citizens of Tennessee have likely heard these three diseases mentioned regularly in the news.

In 2001-2002, experience with WNV provided the foundation for responding to the virus in 2003. The lessons learned from preparing for a possible

smallpox outbreak were tested with SARS and monkeypox. The ability to quickly control new pathogens using standard communicable disease control methods including quarantine were paramount in containing SARS. Further, the smallpox vaccine was used to control monkeypox.

Emerging infectious diseases test the public health infrastructure in Tennessee. We acknowledge the many committed health care professionals who provide surveillance data that provide the foundation for disease prevention and control efforts.

An Update on SARS in Tennessee

The first two cases of SARS in Tennessee (one suspect and one probable) were identified by the Memphis-Shelby County Health Department on May 14, 2003.

One (suspect) case occurred in a Shelby County resident who

had traveled to Toronto, Canada. One (probable) case occurred in a Mississippi resident who had traveled to Hong Kong and Taiwan. Both presented to health care facilities in Shelby County; neither required hospital care and both have recovered. A third (suspect) case of SARS, from Rutherford

County, was identified on June 1, 2003. He traveled to Toronto, Canada. He did not require hospital care and has recovered. All close contacts were notified by the local health department and were requested to monitor their health. All have remained well.

Updated Interim U.S. Case Definition for Severe Acute Respiratory Syndrome (SARS)

The current CDC case definition as of May 23, 2003 includes the following elements:¹

A person presenting with a res-

piratory illness of unknown etiology with an onset since February 1, 2003, that includes:

A measured temperature >

100.4°F (38°C)

AND

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You can also visit us on the web at <http://tennessee.gov/health> by clicking on Programs, then clicking on Emerging Infections Program.



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¹ Centers for Disease Control and Prevention. Updated Interim U.S. case definition of severe acute respiratory syndrome (SARS). June 5, 2003(online). <http://www.cdc.gov/ncidod/sars/casedefinition>. Accessed June 27, 2003.

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One or more respiratory signs or symptoms, including cough, shortness of breath, difficulty breathing, hypoxia, or radiographic findings of pneumonia or respiratory distress syndrome

AND

Either recent travel (including transit in

an airport) to areas reporting community transmission of SARS (see right) or close contact with a person with respiratory illness after travel to a SARS area or suspected of having SARS.

Travel Criteria for suspect or probable U.S. cases of SARS		
Area	First date of illness onset for inclusion as reported case	Last date of illness onset for inclusion as reported case
China (mainland)	November 1, 2002	July 13, 2003
Hong Kong	February 1, 2003	July 11, 2003
Hanoi, Vietnam	February 1, 2003	May 25, 2003
Singapore	February 1, 2003	June 14, 2003
Toronto, Canada	April 1, 2003	July 18, 2003
Taiwan	May 1, 2003	July 25, 2003
Beijing, China	November 1, 2002	July 21, 2003

Isolation and Quarantine

To control the spread of a contagious disease, public health authorities rely on many strategies.¹ Two of these are isolation and quarantine: both aim to control exposure to infected or potentially infected individuals. Both may be undertaken voluntarily or compelled by public health authorities. Isolation applies to people who are known to have an illness and quarantine applies to people who have been exposed to an illness but who may or may not become infected. Success in controlling the SARS epidemic has been dependent on the use of these strategies. Isolation is used with individuals who are possible, suspect, probable, or confirmed cases. The figure below diagrams the use of isolation in SARS.

group needs to be vigilant for fever (measure temperature twice daily) and respiratory symptoms over the ten days following possible exposure. In the absence of BOTH fever and respiratory symptoms, these persons need not limit their activities and should not be excluded from outside activities. If symptoms develop, possible cases should notify their health care provider immediately. Before going to an emergency room or physician office, patients should inform their providers of possible exposure so that arrangements can be made to prevent transmission to others in the health care setting.

ble exposure, this group needs to be vigilant for fever (measure temperature twice daily) and respiratory symptoms over the ten days following exposure. In the absence of BOTH fever and respiratory symptoms after ten days, these persons need not limit their activities and should not be excluded from outside activities. If symptoms develop, possible cases should notify their health care provider immediately.

Possible exposure to SARS. It is important to note that neither isolation nor quarantine is to be used with persons who *may* have been exposed to SARS. This

The Use of Quarantine

Exposure to SARS. If persons have been exposed to patients with SARS, voluntary quarantine is put into place. As with possi-

The Use of Isolation

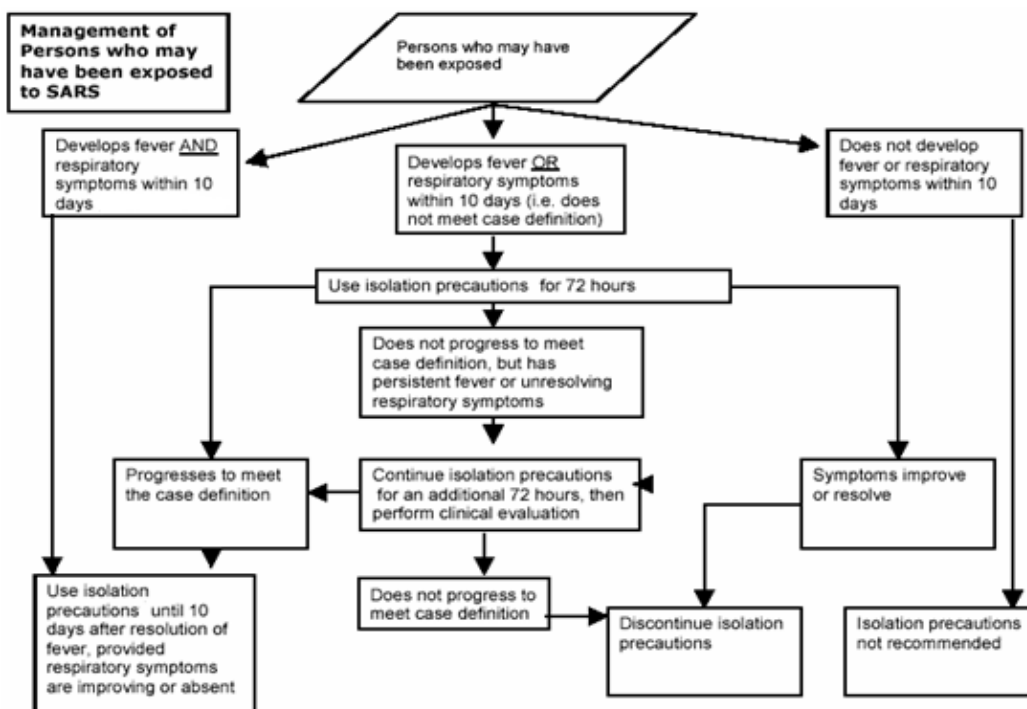
Possible SARS cases. A case meets this definition if fever and respiratory symptoms develop after travel to an infected area. Possible cases need to use infection control precautions to minimize the risk of transmission and to continue to measure temperature twice daily. If symptoms resolve within 72 hours after the first symptom onset, isolation and infection control precautions can be discontinued.

Suspect SARS cases. For cases who have persistent fever and *moderate* respiratory symptoms after travel to an affected area, isolation and infection control precautions should continue until ten days after the resolution of symptoms.

Probable SARS cases. For cases who have fever with *severe* respiratory symptoms after travel to an affected area, isolation and infection control precautions should continue until ten days after the resolution of symptoms.

Confirmed SARS Cases. These

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¹ Centers for Disease Control and Prevention. Interim domestic guidance on persons who may have been exposed to patients with suspected severe acute respiratory syndrome (SARS). July 16, 2003 (online). www.cdc.gov/ncidod/sars/exposuremanagement.htm. Accessed July 16, 2003.

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cases meet the case definition with the following laboratory results: detection of antibody to SARS-CoV in specimens ob-

tained during acute illness or 28 days after illness onset, or, detection of SARS-CoV RNA by RT-PCR confirmed by a second PCR assay, by using a second aliquot of the specimen and a different set of PCR prim-

ers, or, isolation of SARS-CoV. These patients also need to be isolated until ten days after the resolution of symptoms.

Controlling the Spread of SARS

In order to be able to institute measures to prevent or control a possible SARS outbreak in Tennessee, it is imperative that

suspected cases be immediately reported to the local health department or the Tennessee Department of Health, day or night,

at 615-741-7247. Physicians are available for consultation around the clock.

West Nile Virus in Tennessee:2003

West Nile virus (WNV) overwintered in 2001-2002 in Shelby County and moved eastward, eventually becoming established throughout Tennessee by September of last year. Although viral activity was the greatest in west Tennessee, there were human and equine cases in all areas of the state. The Tennessee Department of Health investigated 56 human cases with seven deaths in the state in 2002. In addition, 148 equine cases (44 deaths) were reported by the Tennessee Department of Agriculture. Since the epidemiology of the virus is still being determined, the pattern of WNV occurrence in Tennessee for the 2003 season cannot be accurately predicted. Surveillance by testing dead crows and blue jays, two highly susceptible and plentiful species, currently is still the most effective means for early detection of the virus in an area. Detection via dead bird surveillance then influences public health responses which include increased mosquito control activities where feasible, medical diagnostic guidance, and public education on prevention and avoidance of infection.

Testing Dead Birds

It is known that once WNV is detected in an area, it will remain for the rest of the season. Dead bird testing surveillance in Tennessee for 2003 will thus be utilized only for the identification of the virus. The testing of dead birds is not useful for evaluating focal mosquito infection rates. For rural counties, three positive birds should be sufficient to verify the presence of WNV. Metro areas may wish to subdivide their areas into four or five major sectors and discontinue testing after three to five positive birds in a sector. Further evaluation of virus intensity in an area can only be determined by ap-

propriate mosquito trapping and testing methods.

The process for dead bird testing surveillance has been greatly streamlined for 2003 using new technology. The major changes include the following:

1. The testing of oral swab samples collected at the local level and then discarded rather than shipping dead birds.
2. A new intranet web based data entry system where "real time" information will be available to regional health departments, the state laboratory, and central office. Intake data will be entered at the regional level with laboratory results added as completed.
3. Automatic update of selected data daily to the public on the TDH WNV internet website (tennessee.gov/health).

Testing for WNV in Humans

Many asymptomatic patients, as well as patients exhibiting mild symptoms (headache or fever) who are bitten by mosquitoes, may ask their doctors to test them for WNV. The likelihood of diagnosing WNV infection in these patients is extremely low. Physicians can reassure concerned asymptomatic patients and those with mild illness by advising them that:

1. They are unlikely to be infected with West Nile virus.
2. Those with mild symptoms are likely to recover rapidly and completely.
3. There is no specific treatment for WNV.
4. They should seek medical attention if they develop more severe symptoms, such as confusion, lethargy, muscle weakness, severe headache, stiff neck or photophobia.

Testing Human Specimens for WNV

Community/hospital laboratories do not usually have the capacity to test for viruses, however, the following means exist when this is needed:

1. Patients statewide may be enrolled in the Tennessee Unexplained Encephalitis Surveillance (TUES) Project at Vanderbilt University. Hospitalized patients with at least 24 hours of altered mental status are eligible for enrollment. Cases of encephalitis or meningoencephalitis that are enrolled in this study will be thoroughly tested for a variety of pathogens, including WNV during appropriate times of year. TUES study personnel will obtain consent and arrange for shipping of specimens. There is no charge for testing and shipping specimens. For more information, or to enroll patients in this study, contact the study coordinators at Vanderbilt University (Diane Levine or Delia Woods) at (615) 322-1519 or toll-free at (877) 756-5800, or Dr. Karen Bloch, the Principal Investigator, at (615) 222-6611.
2. For patients who are not eligible or decline enrollment in the TUES study, WNV testing may be performed at the TDH State Laboratory. The State Laboratory will test cerebrospinal fluid/serum specimens for WNV by IgM capture ELISA. Testing for WNV is restricted to patients with encephalitis or meningoencephalitis, who are ill enough to be hospitalized and undergo lumbar puncture for evaluation of central nervous system infection. WNV IgM antibody in CSF/serum is detectable (99% of the time) upon onset of symptoms and is specific for WNV. WNV IgG antibody in CSF/serum is detectable by day seven after onset of symptoms. We recom-

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mend including a CSF specimen whenever possible since a positive IgM in acute CSF with compatible symptoms is confirmatory for WNV infection without further testing. Serologic confirmation of WNV infection usually requires testing of both acute and convalescent serum

specimens. Physicians requesting testing of patients for WNV are strongly encouraged to contact their local health department medical officer to report the suspect case and arrange for testing.

No Monkeypox in Tennessee

Monkeypox is a rare viral disease that occurs mostly in central and western Africa. It is called "monkeypox" because it was first found in 1958 in laboratory monkeys. Blood tests of animals in Africa later found that other types of animals probably had monkeypox. Scientists also recovered the virus that causes monkeypox from an African squirrel. These types of squirrels might be the common host for the disease. Rats, mice, and rabbits can get monkeypox, too. Monkeypox was reported in humans for the first time in 1970.

In early June monkeypox was reported among several people in the United States. Most of these people got sick after having contact with pet prairie dogs that were sick with monkeypox; those prairie dogs had been purchased from a dealer in Illinois. In Tennessee two chinchillas and a wallabee were purchased from this same Illinois dealer. After a thorough investigation the Tennessee Department of Health was assured that there was no illness in Tennessee as a result of these purchases.

The Virus

The monkeypox virus belongs to a group of viruses that includes the smallpox virus (variola), the virus used in the smallpox vaccine (vaccinia), and the cowpox virus. People can get monkeypox from an animal with monkeypox if they are bitten or if they touch the animal's blood, body fluids, or its rash. The disease also can spread from person to person through large respiratory droplets during long periods of face-to-face contact or by touching body fluids of a sick person or objects such as bedding or clothing contaminated with the virus.

In humans, the signs and symptoms of monkeypox are like those of smallpox, but usually they are milder. Another difference is that monkeypox causes the lymph nodes to swell. About 12 days after people are in-

fectured with the virus, they will get a fever, headache, muscle aches, and backache; their lymph nodes will swell; and they will feel tired. One to three days (or longer) after the fever starts, they will get a rash. This rash develops into raised bumps filled with fluid and often starts on the face and spreads, but it can start on other parts of the body too. The bumps go through several stages before they get crusty, scab over, and fall off. The illness usually lasts for two to four weeks.

There is no specific treatment for monkeypox. In Africa, people who got the smallpox vaccine in the past had a lower risk of monkeypox. CDC has sent out guidelines explaining when smallpox vaccine should be used to protect against monkeypox.

Smallpox and Monkeypox

The signs and symptoms of smallpox and monkeypox are similar and thus, a major concern is that health care providers may confuse the two diseases. Since containing smallpox is dependent on prompt diagnosis and isolation of cases, confusing the two diseases could be catastrophic. In fact, the possibility of smallpox was not even considered when the cases of monkeypox were first seen.

Preventing the Spread of Monkeypox

A major effort is underway to prevent the spread of monkeypox in the United States. On June 11, 2003, CDC and FDA issued a joint order announcing an immediate embargo on the importation of all rodents from Africa due to the potential that these rodents can spread monkeypox virus infection to other animal species and to humans. The joint order also banned within the United States any sale, offering for distribution, transport, or release into the environment, of prairie dogs and six specific African rodent species implicated in the current monkeypox outbreak.

Mark Your Calendar!

What: The 4th Annual EIP Scientific Session

When: Wednesday, October 1, 2003

Where: Scarritt Bennett Conference Center, Nashville

For more information, contact Effie Boothe at 615-741-7241.

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Check out the new EIP website at <http://tennessee.gov/health> for information about national and state EIP activities, personnel and the use of data collected by EIP surveillance officers. Click on Programs and then Emerging Infections Program.

To prevent the possibility of monkeypox becoming endemic in the United States, it is crucial that prairie dogs or one of the specified rodents from Africa not be released into the wild or any other public or private environment. Individuals who are apprehensive about retaining these animals should contact their state animal control office for information regarding appropriate disposition. Additionally, individuals should not transport, sell, distribute, or offer for sale or distribution, prairie dogs and the six specified rodents from Africa at pet "swap meets." This kind of exchange makes the tracking of the origin of disease almost impossible and thus makes disease control and prevention extremely difficult.

In order to implement and enforce the joint order, the Centers for Disease Control and Prevention, the Food and Drug Administration, and other involved federal agencies will work collaboratively with state and local veterinary, agriculture, and public health authorities. The Department of Health and Human Services has authority to assist state and local authorities in the prevention and suppression of communicable diseases and to accept state and local assistance in the enforcement of federal communicable disease control regulations. In addition, the joint order does not supercede any action that may be lawfully undertaken by state or local authorities except to the extent that any such state or local action conflicts with the joint order.

CDC maintains a website with detailed, current information about monkeypox. See their homepage at www.cdc.gov. Physicians at the Tennessee Department of Health, Communicable and Environmental Disease Services section are available 24 hours a day for consultation as well (615-741-7247).